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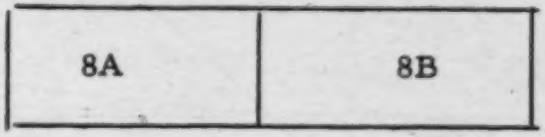
The map of Seriland appearing on pp. 8A and 8B has been processed for the files in the following manner:



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SERII

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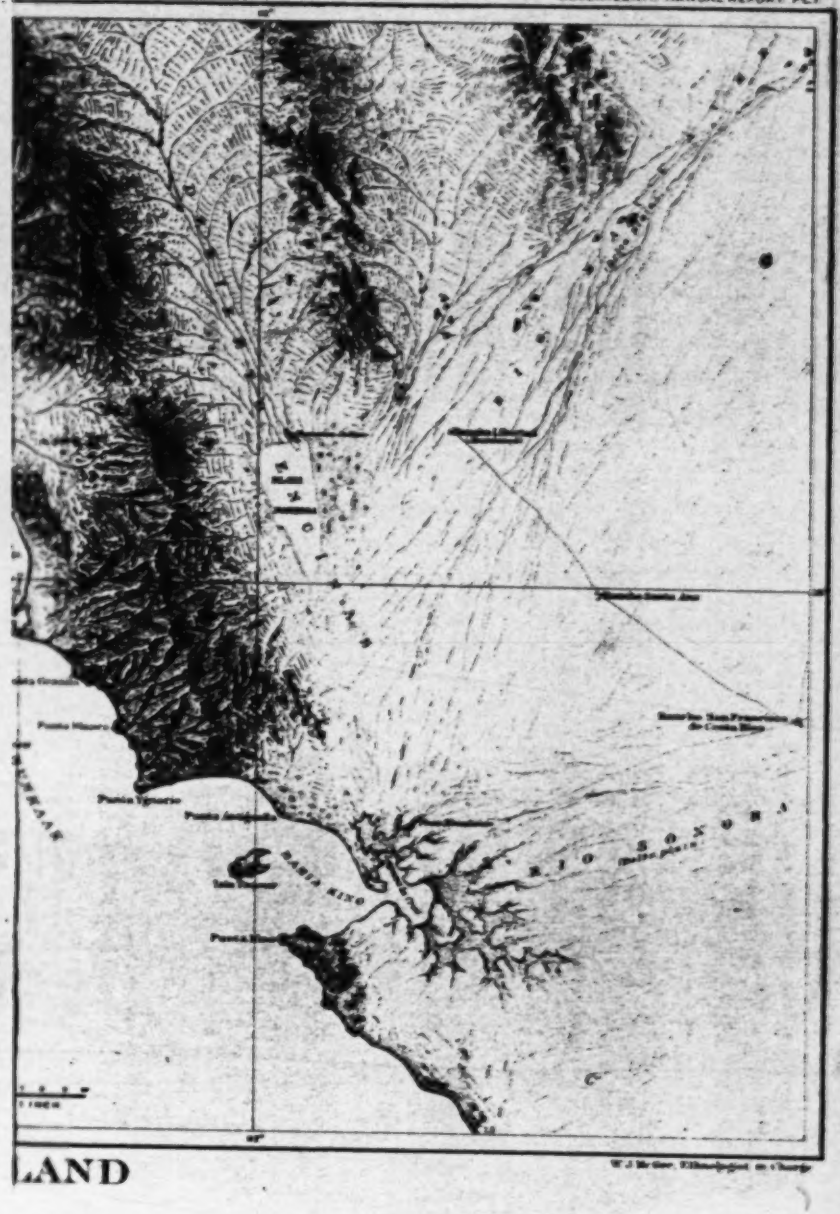

LAND

[p. 8-8]

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THE SERI INDIANS

By W J McGee.

INTRODUCTION

Salient Features

Something has been known of the Seri Indians (Seris, Ceris, Ceres, Heris, Tiburones) since the time of Coronado, yet they remain one of the least-studied tribes of North America. The first systematic investigation of the tribe was made in the course of expeditions by the Bureau of American Ethnology in 1894 and 1895; it was far from complete. 114

The Seri Indians are a distinctive tribe in habits, customs, and language, inhabiting Tiburon island in Gulf of California and a limited adjacent area on the mainland of Sonora (Mexico). They call themselves *Kun-kak* or *Kmike:* their common appellation is from the Opata, and may be translated "spry". Their habitat is arid and rugged, consisting chiefly of desert sands and naked mountain rocks, with permanent fresh water in only two or three places; it is barred from settled Sonora by a nearly impassable desert. Two centuries ago the population of the tribe was estimated at several thousands, but it has been gradually reduced by almost constant warfare to barely three hundred and fifty, of whom not more than seventy-five are adult males, or warriors. 101 [131] 133 161

The Seri men and women are of splendid physique; they have fine chests, with slender but sinewy limbs, though the hands and especially the feet are large; their heads, while small in relation to stature, approach the average in size; the hair is luxuriant and coarse, ranging from typical black to tawny in color, and is worn long. They are notably vigorous in movement, erect in carriage, and remarkable for fleetness and endurance. 142 [147]

The Seri subsist chiefly on turtles, fish, mollusks, water-fowl, and other food of the sea; they also take land game, and consume cactus fruits, mesquite beans, and a few other vegetal products of their sterile domain. Most of their food is eaten raw. They neither plant nor cultivate, and are without domestic animals, save dogs which are largely of coyote blood. 105

The habitations of the Seri are flimsy bowers of cactus and shrubbery, sometimes shingled rudely with turtle-shells and sponges; in some

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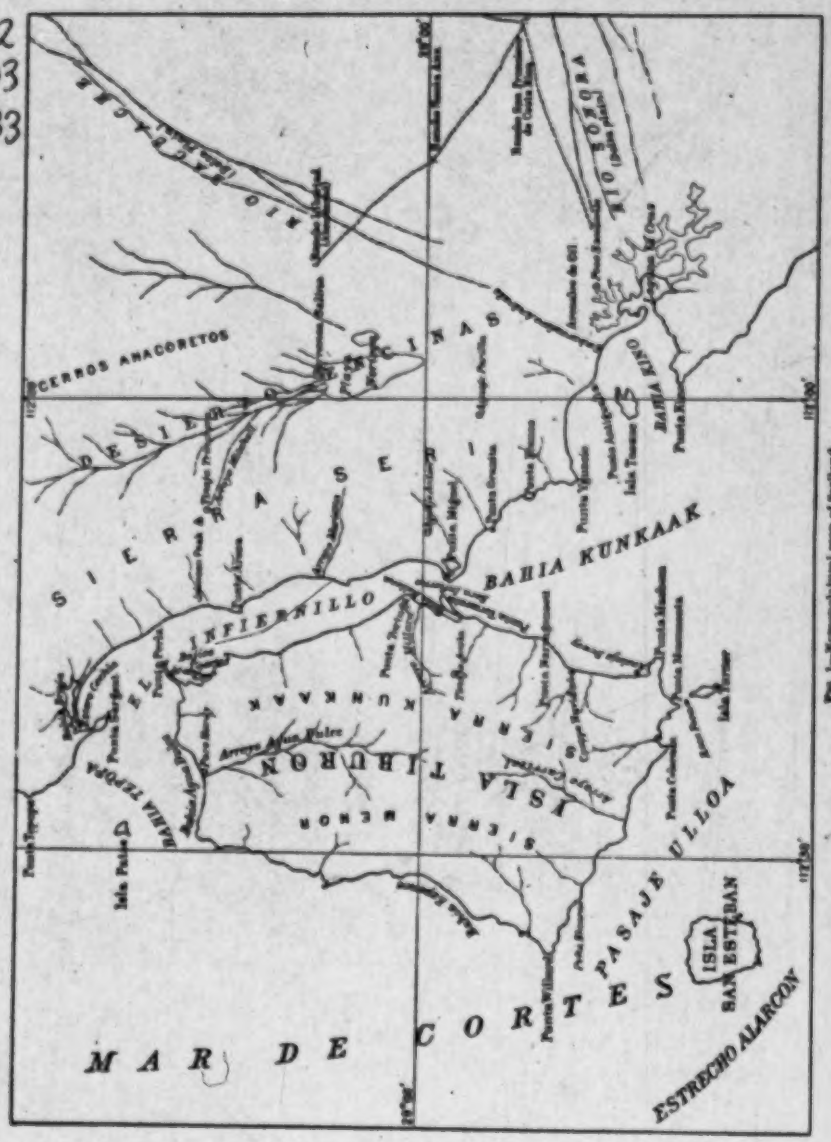

PIG. 1—Kramer-Schmal map of Northland.

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

HABITAT

Location and Area

131 Seriland, the home from time immemorial of the Seri Indians, lies in northwestern Mexico, forming a part of the State of Sonora. It comprises Tiburon island, the largest and most elevated insular body in Gulf of California, together with a few islets and an adjacent tract of mainland; the center of the district being marked approximately by the intersection of the parallel of 29° with the meridian of 112°. The territory is divided by the narrow but turbulent strait, El Infiernillo. It is bounded on the west and south by the waters of the gulf with its eastward extensions to Kino bay, on the east by a nearly impassable desert, and on the north by a waterless stretch of sandy plains and rugged sierras 50 to 100 miles in extent.

Tiburon island is about 30 miles in length from north to south and 12 to 20 miles in width; its area, with that of the adjacent islets, is barely 500 square miles. The mainland tract held by the Seri is without definite boundary; measured to the middle of the limiting desert on the east and halfway across the waterless zone on the north, its area may be put at 1,500 square miles. To this land area of 2,000 square miles may be added the water area of the strait, with its northern and southern embouchures, and the coastwise waters habitually navigated by the Seri balsas as far as Kino bay, making half as much more of water area. Such is the district which the Seri claim and seek to control, and have practically protected against invasion for nearly four centuries of history and for uncounted generations of prehistory.

Physical Characteristics

133 Seriland forms part of a great natural province lying west of the Sierra Madre of western Mexico and south of an indefinite boundary about the latitude of Gila river, which may be designated the Sonoran province; it differs from Powell's province of the Basin ranges in that it opens toward the sea, and also in other respects; and it is allied in many of its characteristics to the arid piedmont zone lying west of the Andes in South America.

In general configuration the province may be likened to a great roof-slope stretching southwestward from a comb in the Sierra Madre to a broad eaves-trough forming Gulf of California, the slope rising steeper toward the crest and lying flatter toward the coast; but the expanse is warped by minor swells, guttered by waterways, and dormered by out-

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

lying ranges and buttes. The most conspicuous inequality of the slopes (partly because of its coincidence with tide-level) is offered by the rugged ranges of Seriland. These may be considered four in number, all approximately parallel with each other and with the coast; the first is a series of eroded remnants (Cerros Anocoreteo) from 600 to 1,200 feet in height; the second is the exceedingly rugged Sierra Seri, culminating in Johnson peak 5,000 feet above tide; the third is Sierra Kunkaak, attaining about 4,000 feet in its highest point; the fourth is Sierra Menor, some 2,000 feet high, with the northern extremity sliced off obliquely by marine erosion. The principal arm of Desierto Encinas lies between the first two ranges, El Infiernillo separates the second and third, while a subdesert valley divides the third from the fourth. The valleys correspond more closely than the ranges; if the land level were 100 feet higher the strait and its terminal bays would become an arid valley like the others, while if the sea-level were 500 feet higher the four ranges would become separate islands similar to Angel de la Guarda and others in the gulf. 133

The Sonoran province is notably warm and dry. The vapor-laden air-currents from the Pacific drift across it and are first warmed by conduction and radiation from the sun-scorched land, to be chilled again as they roll up the steeper roof-slope to the crest; and the precipitation flows part way down the slopes, both eastward and westward from the Sierra Madre—literally the Mother (of waters) range. A climatal characteristic of the province is two relatively humid seasons, coinciding with the two principal inflections of the annual temperature-curve, i. e., in January-February and July-August, respectively. In the absence of meteorologic records the temperature and precipitation may be inferred from the observations at Yuma and Tucson,[1] which are among the warmest and driest stations in America, or indeed in the world; though it is probable that such points as Caborca, Bacuachito, and Hermosillo are decidedly warmer and perhaps slightly moister than Yuma. The ordinary midday summer temperature at these points may be estimated at about 110° in the shade (frequently rising 5° or 10° higher, but dropping 20° to 50° in case of cloudiness); the night temperature at the same season is usually 50° to 75°, though during two-thirds of the year it is liable to fall to or below the freezing point. The sun temperature is high in comparison with that measured in the shade, the exposed thermometer frequently rising to 150° or 160°, according to its construction, while black-finished metal becomes too hot to be handled, and dark sand and rocks literally scorch unprotected feet. The leading characteristic of the temperature is the wide diurnal range and the relatively narrow annual range; another characteristic is the uniformity, or periodic steadiness, of the maxima, coupled with variability and nonperiodicity of the minima. 132

[1] The following monthly and annual meteorologic summaries, compiled from United States Weather Bureau records at these stations, have been kindly furnished by Prof. Willis L. Moore, Superintend-

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

local storms, frequently accompanied by thunder-gusts or sudden tempests, though cold drizzles sometimes occur, especially at the height of the winter humid season. Except where the local configuration is such as to affect the atmospheric movements, the distribution of precipitation is erratic, in both time and space; some spots may receive half a dozen rains within a year, while other spots may remain rainless for several years; and the wet spot of one series of years may be the dry spot of the next. 132

The climatal features of Seriland are somewhat affected by the pronounced topographic features of the district. Snow sometimes falls on Sierra Seri, and probably on Sierra Kunkaak; gales gather about the rugged ranges at all seasons, and sometimes produce precipitation out of season; the extreme heat of midday and midsummer is tempered by the proximity of the tide-swept gulf; and since most of the local derangements tend to augment precipitation and reduce temperature, it would seem safe to estimate the mean annual rainfall of the tract at 4 or 5 inches, and the mean temperature at about 70°, with a mean annual range of some 30° and an extreme diurnal range of fully 80°.

The configuration and climate combine to give distinctive character to the hydrography of the Sonoran province. The melting snows and more abundant rains of the high sierras form innumerable streams flowing down the steeper slopes toward the piedmont plains, or sonk into the pervious rocks to reappear as springs at lower levels; sometimes the streams unite to form considerable rivers, flowing scores of miles beyond the mountain confines; but eventually all the running waters are absorbed by the dry sands of the plains or evaporated into the drier air; and from the mouth of the Colorado to that of the Yaqui, 500 miles away, no fresh water ever flows into the sea. During the winter wet season, and to a less extent during that of summer, the mountain waterways are occupied by rushing torrents, rivaling great rivers in volume, and these floods flow far over the plains; but during the normal droughts the torrents shrink to streamlets purling among the rocks, or give place to blistering sand-wastes furlongs or even miles in width and dozens of miles in length, while beyond stretch low, radially scored alluvial fans, built by the great freshets of millenniums. Only a trifling part of the rainfall of the plains ever gathers in the waterways heading in the mountains, and only another small part gathers in local channels; the lighter rains from higher clouds are so far evaporated in the lower strata of the air as to reach the earth in feeble sprinkles or not at all; the product of moderate showers is absorbed directly by earth and air; while the water of heavy rains accumulates in mud-burdened sheets, spreading far over the plains, flowing sluggishly down the slopes, yet suffering absorption by earth and air too rapidly to permit concentration in channels. These moving mud-blankets of the plains, or sheetfloods,[1] are often supplemented by 133

[1] Defined and described in Sheetflood Erosion, Bull. Geol. Soc. Am., vol. viii. 1897, p. 87.

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

133 the discharge from the waterways of adjacent sierras and buttes; they are commonly miles and frequently dozens or scores of miles in width, and the linear flow may range from a fraction of a mile to scores of miles according to the heaviness of the rainfall and the consequent dilution of the mud. Such sheetfloods, especially those produced by considerable rains, are characteristic agents of erosion throughout most of the province; their tendency is to aggrade depressions and corrade laterally, and thus to produce smooth plains of gentle slope interrupted only by exceptionally precipitous and rugged mountain remnants. A part of the sheetflood water joins the stronger mountain-born streams, particularly toward the end of the great storm whereby earth and air are saturated; another part forms ground-water, which slowly finds its way down the slopes toward the principal valleys, perhaps to reappear as springs or to supply wells. These with certain other conditions determine the water supply available for habitation throughout Seriland and adjacent Papagueria.

Another condition of prime importance arises in a secular tilting of the entire province southwestward. This tilting is connected with the upthrust of the Sierra Madre and the uplifting of the plateau country and the southern Rocky mountain region north of the international boundary. Its rate is measured by the erosion of the Grand Canyon of the Colorado and other gorges; and its dates, in terms of the geologic time-scale, run at least from the middle Tertiary to the present, or throughout the Neocene and Pleistocene. Throughout this vast period the effect of the tilting in the Sonoran province has been to invigorate streams flowing southward, and to paralyze streams flowing toward the northerly and easterly compass-points; accordingly the streams flowing toward the gulf have eroded their channels effectively during the ages, and have frequently retrogressed entirely through outlying ranges; so that throughout the province the divides seldom correspond with the sierra crests.

[134] A typical stream of the province is Rio Bacuache, one of the two practicable overland ways into Seriland (albeit never surveyed until traversed by the 1895 expedition). Viewed in its simple geographic aspect, this stream may be said to originate in a broad valley parallel with the gulf and the high sierra, 200 miles northeast of Kino bay; its half-dozen tributary arroyos (sun-baked sand-washes during three hundred and sixty days and mud-torrents during five days of the average year) gather in the sheetflood plain and unite at Pozo Noriega, where the ground-water gives permanent supply to a well; then the channel cleaves a rocky sierra 3,000 feet high in a narrow gorge, and within this canyon the ground-water gathered in the valley above seeps to the surface of the sand-wash and flows in a practically permanent streamlet throughout the 4 or 5 miles forming the width of the sierra; then the liquid sinks, and 25 miles of blistering sand-wash (interrupted by a single lateral spring) stretch across the next valley

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

133 to Pueblo Viejo, where another sierra is cleft by the channel, and where the water again exudes and flows through a sand-lined rock-bed (figure 2). In the local terminology this portion alone is Rio Bacuache, the upper stretches of the waterway bearing different names; it supplies the settlement and fields of Bacuachito, flowing above the sands 5 to 15 miles, according to season; then it returns to the sand-wash habit for 50 miles, throughout much of which distance wells may find supply at increasing depths; finally it passes into the delta phase, and enters northeastern Seriland in a zone marked by exceptionally vigorous mesquite forests. Normally the 200 miles of streamway is actual stream only in two stretches of say 5 miles each, some 25 miles apart,

FIG. 2.—Gateway to Seriland—gorge of Rio Bacuache.

and the farther of these stops midway between the head of the channel and the open sea toward which it trends and slopes; but during and after great storms it is transformed into a river approaching the Ohio or the Rhine in volume, flowing tumultuously for 150 miles, and finally sinking in the sands of Desierto Encinas, 30 to 50 miles from the coast. Viewed with respect to genesis, Rio Bacuache has responded to the stimulus of the southwestern tilting, and has retrogressed up the slope through two sierras, besides minor ranges and 100 miles of sheetflood-carved plains; while the debris thus gathered has filled the original gorge to a depth of hundreds of feet, and has overflowed the adjacent sheetflood-flattened expanses to form the great alluvial fan of eastern Seriland. The genetic conditions explain the distribution

1: McGee E-4 (1894-1895)1898 NU31 Seri NU31

133 of the water: the product of the semiannual storms suffices to form a meager supply of ground water, which is diffused in the sands and softer rocks of the plains, and concentrated in the narrow channels carved through the dense granites of the sierras; and enough of the flow passes the barriers to supply deep wells in the terminal fan, as at the frontier ranches Libertad (abandoned) and Santa Ana, just as the subterranean seepage from the Sonora more richly supplies the deep well at San Francisco de Costa Rica. In these lower ranches the mineral salts, normally present in minute quantities, are concentrated so that the water from these wells is slightly saline, while deeper in the desert the scanty water is quite salt.

133 312 In Serriland proper the distribution of potable water is conditioned by the meager precipitation, the local configuration (shaped largely by sheetflood erosion), and the disturbance of equilibrium of the scanty ground-water due to the tilting of the province. The most abundant permanent supply of fresh water is that of Arroyo Carrizal, which is fed by drainage and seepage from the broad and lofty mass of pervious rocks forming the southern part of Sierra Kunkaak, the abundant supply being due to the fact that the eastern tributaries are energetically retrogressing into the mass in deep gorges which effectually tap the water stored during the semiannual storms. The arroyo and valley of Agua Dulce are less favorably conditioned by reason of a trend against the tilting of the province and by reason of the narrower and lower mass of tributary rock in the northern part of the range, and the flow is impermanent, as indicated by the absence of canes and other stream plants; yet four explorers (Ugarte, 1721; Hardy, 1826; Espence, 1844; Dewey, 1875) reported fresh water, apparently in a shallow well tapping the underflow, at the embouchure of the arroyo. On the eastern slope of Sierra Kunkaak there are several arroyos which carry water for weeks or even months after the winter rains, and sometimes after those of summer; but the only permanent water—Tinaja Anita—is at the base of a stupendous cliff of exceptionally pervious and easily eroded rocks, so deeply cut that ground-water is effectually tapped, while an adjacent chasm—Arroyo Millard—is so situated that the cliff-faced spur of the sierra above the tinaja absorbs an exceptional proportion of the surface flowage from the main crest. The tinaja (figure 3) is permanent, as indicated by a canebrake some 20 by 50 feet in extent, and by a native fig and a few other trees—though the dry-season water-supply ranges from mere moisture of the rocks to a few gallons caught in rock basins within the first 50 yards of the head of the arroyo. No other permanent supplies of fresh water are known on the island, though there are a few rather persistent tinajas along the western base of Sierra Menor above Willard point.

On the mainland tract there is a cliff-bound basin, much like that of Tinaja Anita, at the head of Arroyo Mitchell and base of Johnson peak, christened Tinaja Trinchera; but the range is narrow and the rocks

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

133 312

granitic, and hence the supply is not quite permanent.[1] A practically permanent supply of water is found in one or more pools or barrancas at the head of Playa Noriega in Desierto Encinas. The liquid lies in pools gouged by freshets in the bottoms of arroyos coming in from the northward, just where the flow is checked by the spread of the waters over the always saline playa; and, since they are modified by each freshet, they are sometimes deep, sometimes shallow, sometimes entirely sand-filled. When the barrancas are clogged, or when their contents are evaporated, coyotes, deer, horses, and vaqueros obtain water by excavating a few feet in the sand lining the larger arroyos. Commonly the barranca water is too saline for Caucasian palates save

FIG. 3—Tinaja Anita.

in dire extremity, but the salinity diminishes as the arroyos are ascended. An apparently permanent supply of saline and nitrous water is found in a 10-foot well, known as Pozo Escalante, or Agua Amarilla (yellow water), near the southern extremity of Desierto Encinas, reputed to have been excavated by Juan Bautista de Escalante in 1700, and still remaining open; its location is such that it catches the subterranean seepage from both Bacuache and Sonora rivers. The water is potable but not palatable. Among the vaqueros of San Francisco de Costa Rica there is a vague and ancient tradition of a carrizal-marked tinaja or arroyo (Aguaje Parilla) at the eastern base of the southern portion of Sierra Seri; and both vaqueros and Indians

[1] Tinaja Trincheza was entirely dry and without trace of carrizal in December, 1894.

1:McGee E-5 (1894-1895)1898 NU31 Seri NU31

133 refer to one or more saline barrancas about the western base of the same semirange, probably in Arroyo Mariana.

312 In brief, Arroyo Carrizal, Tinaja Anita, and Pozo Escalante are the only permanent waters, and Pozo Hardy, Barranca Salina, and Tinaja Trinchera the only subpermanent waters actually known to Caucasians in all Seriland, though it seems probable that permanent water may exist at Aguaje Parilla and in Arroyo Mariana, and impermanent supplies near Bahia Espence. There may be one or two additional places of practically permanent water in smaller quantity, and a few other places in which saline water might be found either at the surface or by slight excavation, and which may be approximately located by inspection of the map under guidance of the principles set forth in the preceding paragraphs; but this would seem to be the limit of trustworthy water supply. During the humid seasons the waters are naturally multiplied, yet it is improbable that any of the arroyos except Carrizal and Agua Dulce and a few minor gulches along the more precipitous shores shed water into the gulf save at times of extraordinary local flood.[1]

133 The geologic structure of the Sonoran province is complex and not well understood. So far as the meager observations indicate, the basal rocks are granites, frequently massive and sometimes schistose, sometimes intersected by veins of quartz, etc. The granitic mass is upthrust to form the nuclei of Sierra Madre and other considerable ranges; it also approaches the surface over large areas of plains. Resting unconformably on the granites lie heavy deposits of shales and limestones, commonly more or less metamorphosed; these rocks outcrop on the slopes of most of the main ranges and form the entire visible mass of some of the lower sierras and buttes, while they, too, sometimes approach the surface of the sheetflood-carved plain. The rocks, both calcareous and argillaceous, combine the characters of the vast Mesozoic limestone deposits of eastern Mexico and the immense shale accumulations of corresponding age in California, and hence probably represent the later half of the Mesozoic. This is the only sedimentary series recognized in the province. Both the granites and the sedimentary beds are occasionally overlain by volcanic deposits, chiefly in the form of much-eroded lava-sheets and associated tuff-beds, which sometimes form considerable ranges and buttes (notably Sierra Kankaak, of Isla Tiburon); these remnantal volcanic deposits are probably late Mesozoic or early Tertiary. Newer volcanics occur locally, forming mesas, as about Agua Nueva (40 miles northwest of Hermosillo), or even coulees apparently filling barrancas of modern aspect, as in the vicinity of Bacuachito,[2] or rising into cinder cones surrounded by

113 [1] The physiographic features of the Sonoran province in general are treated in greater detail in a paper on Floodflood Erosion, Bull. Geol. Soc. Am., vol. VIII, 1897, pp. 87-112, and in a paper on Papaguería, Nat. Geog. Mag., vol. IX, 1898, pp. 343-371; while certain local features are described in a paper on Seriland, prepared jointly with Willard D. Johnson, Nat. Geog. Mag., vol. VII, 1895, pp. 126-133. The aggregate available fresh water of Seriland is estimated on p. 181.

[2] Noted by Willard D. Johnson.

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

ejectamenta, as at Pico Pinacate, in northwestern Sonora. The various rocks are usually bare or meagerly mantled with talus in the mountains; over the greater part of the plains they are commonly veneered with sheetflood deposits, ranging from a few inches to a few yards in thickness; while the central portions of the larger valleys are lined with alluvial accumulations reaching many hundreds of feet in thickness. 133

The clearly interpretable geologic history began with extensive degradation and eventual baseleveling of a granitic terrane in Paleozoic or early Mesozoic time; then followed the deposition of the shales and associated limestones during the later Mesozoic; next came elevation, accompanied or followed by corrugation, chiefly in folds parallel with the present coast, whereby the granite-based sierras were produced, and accompanied also by the earlier vulcanism to which the volcanic sierras owe their existence. A vast period of degradation ensued, during which the land stood so high as to induce greater precipitation than that of today and to permit the streams to carve channels far below the present level of tide, and during which the present general configuration was developed; then came the southwestward tilting and consequent climatal desiccation, the filling of the deeper valleys, the inauguration of sheetflood erosion, some local vulcanism, and the progressive shifting of the divides.

The geologic structure affects the hydrography, especially that factor determined by subterranean circulation, or ground-water; for the superficial sheetflood and alluvial deposits are highly pervious and many of the volcanics hardly less so, while the shales and limestones are but slightly pervious and the granites nearly impervious. The geologic structure also determines the character of the soil with exceptional directness, since the dryness of the air and the dearth of vegetation reduce rock decay to a negligible quantity. The characteristically precipitous sierras and cerros are of naked ledges, save where locally mantled with a mechanical débris of the same rocks (much finer than the frost product of colder and humider regions); the soil of the normal plains is but the little-oxidized upper surface of sheetflood deposits made up of the mechanical debris of local rocks and varying in coarseness with the slope; while the soil of the valleys is detrital sand and silt, derived from tributary slopes, passing into adobe where conditions are fit, and essentially mechanical in texture and structure save where cemented by ground-water solutions at the lower levels. 134

Flora

The flora of the Sonoran province affords a striking example of the adjustment of vegetal life to an unfavorable environment. The prevailing vegetation is perennial, of slow growth and of stunted aspect; and it is not distributed uniformly but arranged in separate tufts or clusters, gathering into a nearly continuous mantle in wetter spots, though commonly dotting the plains sparsely, to completely disappear 137

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and more than ordinary littoral variety; for the waters of the gulf are warmed by radiation and conduction from its sun-parched basin, while the concentrated tides distribute and stimulate the species and keep the vital streams astir.

Local Features

Considered as a tribal habitat, Seriland comprises four subdivisions of measurably distinct character, viz, (1) the broad desert bounding the territory on the east; (2) the mountainous zone of Sierra Seri; (3) Tiburon island and the neighboring islets; and (4) the navigable straits and bays contiguous to island and mainland.

1. So far as its marginal portions are concerned, Desierto Encinas is a typical valley of the Sonoran province, sparsely dotted with vital colonies of the prevailing type and variegated by the exceptionally luxuriant mesquite forests of the Bacuache and Sonora fans; but the interior of the valley is rendered distinct by the fact that it lies near, if not below, the level of the sea.[1] The central feature is Playa Noriega—a film of brackish water for a few days after each considerable semiannual freshet, a sheet of saline mud for a few weeks later, and for the greater part of the year a salt-crusted sheet 20 square miles in area, level as a floor and unimpressionable as a brick pavement. The playa is rimmed by dunes 10 to 40 feet in height, and about these and along the arroyos which occasionally break into it there is some aggregation of salt-enduring shrubs, evidently sustained in part by the semiannual freshet with its meager vapors and fogs. Outside this rim the surface is exceptionally broken; low dunes and irregularly wandering banks of soft and dust fine sand are interspersed with meandering salt flats much like the central playa, ranging from a few feet in width and a few yards in length up to mappable dimensions, as in the lesser playa lying east of the great one; and many of the dust-banks are honeycombed with squirrel burrows. This annulus of broken surface is narrow on the west, soon passing into okatilla scrub and then

[1] The expedition of 1895, during which Seriland was surveyed, was not provided with apparatus for accurate vertical measurement, and hence altitudes were only approximately determined. The determinations by Mr Johnson, who executed the topographic surveys, indicated that even the lowest part of the valley is somewhat above sea-level; but other facts indicate that it actually lies below the level of the waters of the gulf, and forms a miniature boundary-sag of Colorado desert (in southern California); in the first place the central playa, which is undoubtedly flooded occasionally if not semiannually, does not embouch into, and has no channels extending toward, the sea; in the second place it is highly saline; again, the alluvial fans of Rio Bacuache and (especially) of Rio Sonora are so placed as to intercept and dam the trough occupied by Laguna la Cruz in its southern portion and Playa Noriega in its northern portion; concordantly, the detail configuration of the coast indicates marine transgression, apparently due to secular subsidence of the land—though the abundant marine shells of recent species toward the valley-bottom attest recent displacement of the sea. On the whole, the facts seem to indicate that, during recent geologic times, the lower portion of this valley was a shallow gulf extending northward (and probably also southward) from the eastern limit of Bahia Kino; that the importation and deposition of sediment, chiefly by Rio Sonora, outran the secular subsidence of the land so far as to displace the waters of the gulf in its central portion and to separate the northern arm from the sea; and that the waters of this northern arm were subsequently evaporated, disappearing finally in the central playa in which local inflow and evaporation are balanced by the usual mechanism of interior basins.

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

into the saguesa forests of the eastern base of Sierra Seri; on the east it is miles in breadth, passing gradually into the normal Sonoran plain; on the south it widens still farther, stretching all the way to Arenales de Gil and Pozo Escalante, and merging into the playa-like mud-flats bordering Laguna la Cruz, into which the gulf waters are sometimes forced by southwesterly gales at high spring tides. Throughout this portion of the desert, marine shells are scattered over the playa-like flats or lodged in the adjacent banks, sometimes in great beds; the vegetation is scantier than usual and largely of salt-loving habit; the mud-flats are usually coated with saline and alkaline crusts, while the dunes are soft and fluffy, and expand into broad belts perforated with the tunnels of the surprisingly abundant rodents. Across this plain of bitter sand-dust lie the two hard land routes to Seriland—the supposed Escalante route of 1700, down the fan of Rio Bacuache and thence by Barranca Salina; and the Encinas route, down the northern border of the Rio Sonora fan and thence by Pozo Escalante to the shores of Bahia Kino.[1]

Desierto Encinas is an impossible human habitat in any proper sense; it is merely a broad and hardly passable boundary between habitats. The hardy stock of the frontier ranchos, pasturing partly on the thorny fruit of the cholla, push far out on the plains, and are sometimes watered for short periods, under strong guards of heavily armed vaqueros, at Barranca Salina; yet the greater part of the expanse is trodden only by the Seri. Two or three ruined frames of Seri jacales and a few graves crown the low knoll near Pozo Escalante, and there are one or two house remnants near Barranca Salina; these are notable not only as the easternmost remaining outposts of Seri occupancy, but because they represent the only known instances in all Seriland of the erection of even temporary houses adjacent to water. Distinct paths, trodden deep by bare Seri feet, radiate from both waters toward the Seriland interior, but no traceable trails extend eastward.

The southern limit of Desierto Encinas is marked either by the broad mud-flats opening into Laguna la Cruz or by the coast of the gulf, the coast cutting the lower portions of the plain being accentuated by a sand-bank 30 or 40 feet high, against which the surf thunders in nearly continuous roar, audible halfway or all the way to Pozo Escalante. A Seri trail skirts the crest of this bank, sending occasional branches into

[1] Both the routes were traversed by the expedition of 1895, the former from the headwaters of Rio Bacuache to the upper portion of its alluvial fan, and thence from the abandoned Rancho Libertad on the lower portion of the fan across Desierto Encinas by way of Barranca Salina. In the northern crossing a light vehicle (the first to traverse this portion of the desert), drawn by four horses and aided by several horsemen, was taken from Rancho Libertad across the northern portion of Playa Noriega and thence up Arroyo Mitchell to a point midway between Barranca Salina and Jalapeño peak, and was brought back over the same route. The Encinas trail from Rancho San Francisco de Costa Rica was traversed four times each way by the same outfit, and once each way by the running gear of a heavy wagon carrying the rude craft (about 1,000 pounds in weight) in which the Seri waters were navigated, this vehicle being drawn by 8 to 12 horses, frequently changed. Typical aspects of both routes are shown in plate III, the upper figure representing the Encinas trail and the lower a distant view of Sierra Seri, taken from Playa Noriega, in the depths of Desierto Encinas.

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

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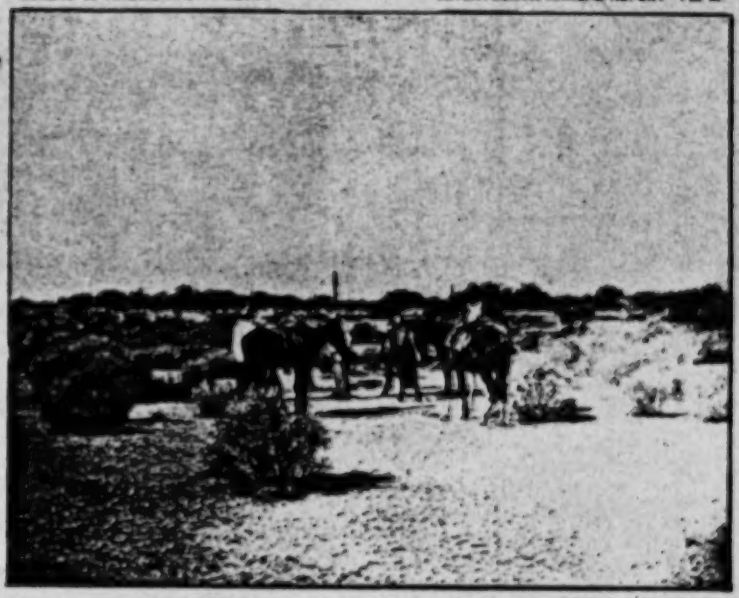
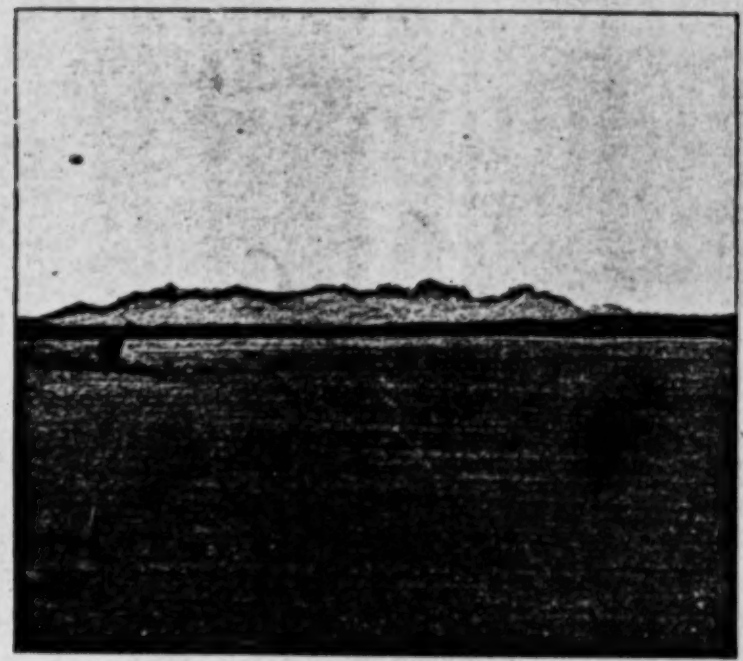


SERI FRONTIER



SIERRA SERI FROM ENCINAS DESERT

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1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

the interior. At Punta Antigualla the bank expands and rises into a great mammillated shell-mound nearly 100 feet high, with several of the cusps occupied by more or less ruined jacales; and occasionally occupied houses occur midway thence to the southernmost point of Sierra Seri, and again at the base of the first spur east of Punta Ygnacio. Beyond Punta Antigualla the sweep of the waves is stronger than in Bahia Kino, and the coastal sand-bank is generally higher. Between the rocky buttresses of Punta Ygnacio and the next spur eastward the sand-ridge rises fully 50 feet above mean low tide, and here, as elsewhere, its verge is protected by a fog-fed chaparral thicket with occasional clumps of okatilla and other cacti. Behind the coast barrier lie lagoon-like basins, generally dry and floored with saline silt-beds, though sometimes occupied by briny pools formed through seepage during southwesterly gales; and there are physiographic indications that the northwestward extension of Laguna la Cruz formerly stretched some miles farther than now and lay in the rear of Punta Antigualla in such wise as to form a source of supply of the clam-shells of which the eminence is built.

2. Sierra Seri is a double range, divided mid-length by a broad saddle barely 2,000 feet in height.[1] Like other Sonoran ranges, the nucleal portions are exceedingly ragged and precipitous—at least two of its pinachos shoot so boldly that they commonly seem to overhang, and have been called leaning peaks. In large part the precipices rise abruptly from a symmetrical dome molded by sheetflooding, much as the insulated buttes rise from the Bacuache fan in northeastern Seriland; so that the tract lying between Desierto Encinas and El Infiernillo is a composite of exceptionally precipitous and exceptionally smooth mountain slopes. One of the Seri trails radiating from Barranca Salina lies across the mid-sierra saddle; others push into several mountain valleys, and the largest leads to Tinaja Trincbera, at the base of Johnson peak, where there are a few low walls of loose-laid rubble, somewhat like those of the tringheras (entrenched mountains) farther eastward—the only structures of the sort seen in Seriland. Toward the southern end of the range lie various trails, the most conspicuous paralleling the coast, either near the shore or over the steep salients, according to the configuration; while here and there ruinous jacales a few yards from the coast attest sporadic habitation. The eastern shore of Bahia Kunkaak from Punta Ygnacio northward reveals a typical geologic section of the Sonoran provinces: the transgressing waves have carved in the granitic subterrane a broad shelf lying just below mean low tide and usually stretching several furlongs offshore; this shelf is relieved here and there by remnantal crags of obdurate rocks, cumbered by bowlders and locally sheeted with sand and arkose derived from mechanically disintegrated granite; while the

[1] The northern portion, as seen from the east, is shown in plate III; the southern portion, as seen from the west, appears in the upper part of plate IV, while the southwesternmost point is shown in the lower part of the same plate.

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

133 inner margin of the shelf is a sea-cliff, usually 30 to 50 feet high, of which the lower half is commonly granite and the upper half unconsolidated and recent-looking mechanical debris collected by sheetflood erosion. Sometimes the granite of the subterrane is replaced by volcanics; sometimes ancient and firmly cemented talus deposits separate the superficial mantle from the subterrane, as shown in the lower part of plate v; sometimes the line of sheetflood planation passes below tide-level, when the waves beat against the unconsolidated deposits in a deep embayment; sometimes the sharply defined planation surface ends abruptly at the sides of subranges or buttes shooting upward in the abrupt slopes characteristic of the sierra proper; yet this 10-mile stretch of coast is a nearly continuous revelation of the structure of sheetflood-carved plains and of modern marine transgression. The debris of the combined processes forms an abundant and varied assortment of bowlders, cobbles, and pebbles, whence the inhabitants readily derive their simple implements without need for studied forethought or manual cunning.

The long sand-spit terminating in Punta Miguel and the shorter one terminating in Punta Arena are the product of geologically recent wave building, and consist of irregular series of V-bars, backed by lagoon-like basins and enclosing considerable bodies of brine in the central portions; and the bars and basins become successively higher outward, in such wise as to attest the secular subsidence of this coast.

[361] [487] Several jacales are located on the higher portion of the southern sand-spit, midway between Punta Granita and Punta Miguel, while foot-paths traverse the flat and skirt the coast. Toward the terminal portion of the spit the sand is blown into hummocks, held by clumps of salt-enduring and sand-proof shrubbery; but there are no rancherías here, despite the fact that it is a natural point of embarkation—doubtless because no Seri structure could withstand the sand-drifting gales and storm inundations of this exposed spot. The more protected

[136] lagoons behind the outer bars harbor abundant waterfowl, within bowshot of shrub-clumps and dunes well adapted to the concealment of hunters, while the mud-flats open to the tide abound in clams and other edible things. The features of the Punta Miguel sand-spit are repeated with variations along the eastern shore of El Infiernillo; and

[361] Seri jacales, evidently designed for temporary occupancy, occur here and there, usually on higher banks above reach of the severer storms.

3. Tiburon island itself is apparently the chosen home of the Seri—

[131] a habitat to which the mainland tract is at once a dependency, an alternative refuge, and a circumvallation. Its dominant range, Sierra Kunkaak, mates Sierra Seri in its essential features, though the rocks are for the greater part ordinarily obdurate eruptives rather than exceptionally obdurate granites, as in the mainland sierra; accordingly the range is somewhat lower and broader, while the sheetflood sculpture, with its sharp transition into precipitous cliffs, is somewhat less trench-

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

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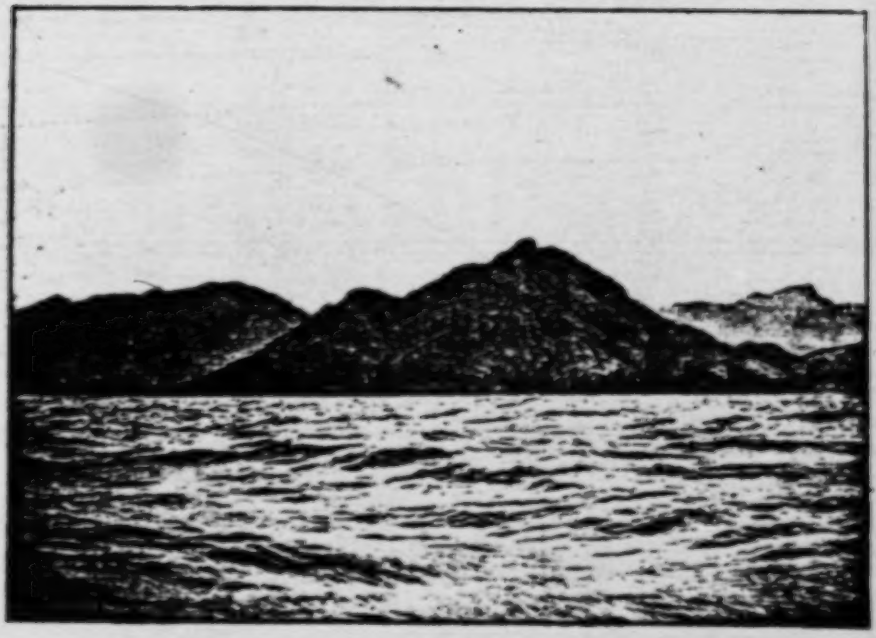
SIERRA SERI FROM TIBURON ISLAND



PUNTA YGNACIO, TIBURON BAY

[p. 42a]

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

ast. Sierra Menor is a third term in the mountain series, in structure and geomorphy as in altitude; while the interior plain is a homologue of that portion of Desierto Encinas lying north of Playa Noriega—i. e., of its (potentially) free-drained portion. Almost the entire perimeter of Tiburon is suffering marine transgression, and is faced with sea-cliffs overlooking wave-carved shelves; and in both form and structure the greater part of the coast repeats, with minor variations, the features of the mainland coast from Punta Ygnacio northward. Partly because of the superior magnitude and height of its debris-yielding sierra, partly because of protection from the wave-beat of the open gulf, the eastern shore is skirted with a talus-shape slope, usually two to four miles wide; and while there are unmistakable evidences of sheetflood carving in the higher portions of this plane, the coastal cliff commonly reveals nothing but heterogeneous debris, sometimes rising thirty or forty feet above tide. Somewhat the greater part of the volume of this debris is fine—i. e., sand and silt and nondescript rock-matter; but there is always a considerable element of larger rock-fragments, which gather along the shore in a pavement of bowlders and cobbles (upper figure of plate v). These coarse materials—important factors in aboriginal industry—are harmoniously distributed: more conspicuously on the ground than on the map, the coast is set with salients (of which Punta Narragansett is a type), consisting merely of exceptional accumulations of debris from gorges in the sierra and from shallow arroyos, or pebble washes, traversing the coastwise plain. These salients owe their prominence partly to the relative coarseness, partly to the abundant supply, of fragmental material from the heights; and about their extremities the beach is paved with bowlders, which grade to cobbles or even to pebbles along the reentrant shores on either hand. This distribution of cobbles is one of the conditions governing the placement of Seri rancherias; and in many cases the jacales are located, either singly or in groups, where the coastal salients and reentrants meet, and where there is an abundant supply of cobbles of convenient size and wave-tested hardness.

The coastwise plain skirting eastern Tiburon has a few wave-built projections analogous to those east of El Infiernillo; the most conspicuous of these are Punta Tormenta, Punta Tortuga, and Punta Perla with its tide-swept extensions, Bajias de Ugarte. All of these are located primarily by sierra-fed arroyos, but all are greatly extended by wave-borne material laid down along lines determined by the prevailing currents of this best-protected portion of the coast. The long outer face of Punta Tormenta, shaped by the storms of Bahia Kunkaak, is strikingly regular and symmetric; its broad extremity and inner face are diversified by subordinate bars and lagoons, evidently tending to connect with the main coast toward Punta Tortuga, and thereby to transform the whole of Rada Ballena into a lagoon. Already the narrow embayment is so shallow that, although a com-

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

133 fortable haven at high tide, it is mostly mud-flat and sand-waste at extreme low tide—a condition which explains the stranding of an 80-foot whale in this treacherous harbor about 1887. The rada is between two and three miles in length. It abounds in marine life of
136 kinds preferring quieter waters: clams are plentiful in its mud-flats, a sponge lines portions of the bottom toward its inner extremity, oysters cluster numerously on bowlders and on the mangrove-like roots and trunks of a large shrub along the outer shore, and various fishes find refuge here from the fierce currents and the hungry sharks and porpoises of the open strait; these and other creatures form food for innumerable waders and other water-fowl that seek shelter in the quiet bay, which is still further protected by salt-enduring shrubbery on the bars of the point and by the shrubby thickets and wave-cast banks and wind-built dunes on the mainland side.

The combination of conditions renders this portion of the Tiburon
361 coast the optimum habitat of the Seri Indians. There are, indeed, no houses or other traces of permanent habitation on Punta Tormenta itself, which is not only swept by gales but must sometimes be inundated by gale-driven waters at high spring tide; but at the inner end of the long sand-spit, and also on the mainland opposite the outer portion of Rada Balleña, there are extensive and well-kept rancherías, capacious enough to accommodate comfortably thirty or forty Seri families, i. e., 150 or 200 persons. Toward its landward end the sand-spit is built
311 largely of pebbles and cobbles, of which thousands of tons are adapted to industrial use; sea-food is practically unlimited and is readily taken; water-fowl literally crowd the protected rada within arrow-shot of natural cover; the outer slope of the bar is admirably suited for landing and embarking balsas in calm weather, while the bay is an ideal harbor for the portable craft, and the shrub-grown shores give unlimited opportunity for concealing them when not in use; the dunes and banks are high enough to protect the low jacales from storm-winds, while the abundant sponges and turtle-shells afford material for thatching and shingling the more exposed walls and roofs; and finally,
[312] it is but a favorite distance (about 4 miles) to the permanent fresh
487 water of Tinaja Anita. From this Seri metropolis well-trod trails radiate toward all other parts of the island; the best-beaten leads to the tinaja, sending branches into all the neighboring gorges, in which game is sometimes taken; next best-worn is the trail laid across Sierra Kunkaak to strike Arroyo Carrizal mid-length of its permanently wet portion; others pass northward to rancherías at different points on the coast, and still another skirts the coast southward by several smaller rancherías to the considerable jacal collection near Punta Narragansett—this, like other longshore routes, having alternative trails, the evanescent fair-weather one following the beach, while the permanent path threads the thorn-set thickets marking the crest of the sea-cliff or cuts across the longer salients. The Narragansett ranchería is

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

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WESTERN SHORE OF TIBURON BAY

EASTERN SHORE OF TIBURON BAY

[p. 44a]

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

also a center for radiating trails, the best-beaten of these leading toward the fresh waters of Tinaja Anita and Arroyo Carrizal; and even the rancherias half-way thence to Punta Mashém send their most permanent paths over 15 miles of intervening ranges and spall-strewn valleys toward the same waters. According to Mashém's cautious statements, there is a minor Seri metropolis at the northwestern spur of Sierra Kunkaak, within reach of Pozo Hardy and Arroyo Agua Dulce, and two or three smaller rancherias along the western shore; but these were not reached by the 1895 expedition.

4. The seas washing Seriland are notably troubled by tides and winds. Gaping toward the Pacific, and narrowing and shoaling for the 800 miles of its length (measured from midway between Islas de Tres Marias and Cabo San Lucas), Gulf of California approaches Bay of Fundy, Bristol channel, and Broad sound as a tide accumulator; while the semidiurnal sweep of the waters in the upper half of the gulf is conditioned by the constriction of the basin to a fraction of its average cross-section at the narrows between Isla Tiburon and Punta San Francisquita. Toward the head of the gulf the ordinary spring tides range from 20 to 25 feet, and may be much increased by favoring winds; the debacles culminate there, but the currents culminate off Seriland in the great tide-gate half dammed by the islands of Tiburon, San Esteban, San Lorenzo, and Salsipuedes,[1] with their marine buttresses, and through the breaches of Pasaje Ulloa, Estrecho Alarcon, and Canal de Salsipuedes flow, four times daily, some two or three cubic miles of water in tremendous tidal floods, probably unsurpassed in vigor elsewhere on the globe. Naturally the islands and the adjacent coasts afford extraordinary examples of marine transgression; and while exceptional wave-work is a factor, the transgression is undoubtedly due mainly to the extraordinary tidal currents in this gateway of the gulf. The fierce currents and the frequent storms of the region condition local navigation, and have undoubtedly contributed to the development of the peculiarly light, strong, and serviceable water-craft of the aboriginal navigators among the islands.

El Infiernillo derives its distinctive characteristics largely from the local character of the tides. Bahia Kunkaak is a funnel-shape embayment so placed as to catch half the volume of the incoming tide and to

[1] Originally the name Islas Sal-si-puedes (Get-out-if-canst) was applied to the various islands of this gateway of the gulf, including San Lorenzo, San Esteban, and San Agustin (now Tiburon), together with the smaller islets, as shown in the map of Padre Fernando Consag (in Noticia de la California y de su Conquista, etc., por el Padre Miguel Venegas, 1757, tomo iii, p. 194); and Padre Consag's account of the currents encountered in 1746 explains the designation: "The great sea which runs here even in fair weather would not allow us to stay, and it was with great difficulty we took in a little water. We now attempted to weather the Cape of San Gabriel de Sal-si-puedes, so greatly dreaded by mariners on account of those islands, several contiguous points of land and many ledges of sunken rocks extending a great way from the land. Here the sea is so agitated by the current that a gale or a calm makes but little difference" (English translation of Venegas' Noticia, titled *A Natural and Civil History of California*, 1759, vol. ii, pp. 343-352). Hittell speaks of "the group of islands known as Salsipuedes, the largest of which is now called Tiburon" (History of California, 1898, vol. i, p. 225). Dewey restricted the name to a single small island near the Baja California coast. Further references to the islands and their designations are noted postea, p. 68.

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

133 concentrate the flow into a bore hurtling through Boca Infierno and thence throughout the shoaling strait with greatly accelerated velocity; meantime the body of the tidal stream is diverted around Tiburon, and thus enfeebled in its northward flow by the expansion of the gulf above the Tiburon-San Francisquito gateway, so that the entire strait is flooded (to the limit fixed by the capacity of Boca Infierno) before the main tide flows into its head past Isla Patos and through Bahia Tepopa; and with this unobstructed inflow the strait is reflooded with a counterbore, whereby the waters are heaped and pounded into an unstable, swirling, churning mass.[1] The flooding is little less than catastrophic in magnitude and suddenness; indeed, the volume of water in the body of the strait between Punta Peria and Boca Infierno

[114]

[1] Unquestionably the clearest view of El Infiernillo ever enjoyed by Caucasian eyes was that of Messrs Johnson and Mitchell from the culminating point of Sierra Seri (Johnson peak), which they occupied for about twenty-three hours on December 7 and 8, 1895. Mr Johnson's notes on the appearance of the strait are as follows: "On the occasion of the ascent of Sierra Seri, which rises from the coast, shutting off the view of Isla Tiburon from the desert on the east, I received a striking impression of the elaborate and beautifully symmetrical plan of the long swirling currents of El Infiernillo. The climb had been made from the east direct to the summit peak, so that the first sight of both island and gulf was not only from close at hand, but from an elevation of about a mile. The crest of the ridge was reached at the instant of sunset, and the spectacle of the innumerable current-markings was brief. Our position was nearly opposite the northern end of the strait; and its elevation was so great that the opposite mainland and island shorelines were seen in map effect rather than in perspective. The entire strait, to its northern end at Punta Peria, was in the shadow of the island; and the current design was revealed only in the shadow. At the shadow-margin extending from the northern tip of the island the lines were sharply cut off; and beyond, along the westward bend of waters forming Bahia Tepopa and opening into the gulf in full sunlight, there was no suggestion of them. Within the shadow the effect was that of a film of oil on a water-surface which had been stirred and allowed to come to rest—though the regularity of the lines was as though the stirring had been orderly. Not the slightest motion was perceptible from the peak during the minute or two that the spectacle lasted before the sun disappeared and twilight fell, though the suggestion from configuration alone was that of violent swirling. The general movement was evidently southward toward Boca Infierno, and the swirls were apparently the result of frictional resistance along both shores; the system of curving lines as a whole was very much that which would be presented by a broad feather thrust into a bottle. There were central lines in great number, somewhat sinuous though never crossing, diverging one by one toward the shores on either hand, where they curved backward with complex interbraiding in large reversing arcs and many minute civelings. The straightening out of the curves in perspective was quite perceptible toward Boca Infierno, and beyond it was pronounced. The air appeared to be still, so that the current pattern was not at all obscured by waves; and the spectacle of the broad strait, appearing almost beneath me, inclosed with a crowded delight of swooping fine lines, the delicate sinuosities of which recalled a steel engraving, was peculiarly impressive. That we had been fortunate in the moment of reaching the summit was apparent next day. The spectacle was, indeed, repeated at sunrise and for a short period thereafter, though the general design was markedly different, and less intricacy of pattern was discernible, while the general effect was comparatively vague; perhaps the shadow of Sierra Seri was too heavy, or, more probably (as was my impression at the time), our position was not favorable for that direction of illumination. In full light during the day up to the hour of our departure in late afternoon, no hint or vestige of the current design remained. It was evident that the lines were brought out with expected clearness by the favorable illumination and comparative stillness of air; and it was particularly evident that the lines marked movements in the water, even if there were corresponding air-currents, since they harmonized perfectly with the configuration of the shores and with the trend of spits and bars and offshore markings seen through the shallow waters, especially toward the northern end of the strait. The accord between shore curves and the current lines seen in the evening indicated a southward motion much more vigorous than the reverse movement witnessed next morning; for the marked variation in the design noted in the morning was of a character strongly suggesting a reversed movement of the water, while the faintness of the markings then may perhaps have been due to comparative feebleness of current rather than to unfavorable lighting. Certainly the close agreement between the elaborate system of markings, so clearly revealed in the evening, and the prevailing curves of the shores would seem to indicate unmistakably that, whatever the direction and strength of flow, the markings were a product of current motion."

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

is approximately doubled at neap tide and tripled at spring tide twice in each twenty-four hours. Then, as the crest of the main debacle advances into the upper gulf beyond Punta Tepopa, the trough of the ebb is already approaching the Tiburon-San Francisquito constriction; and even before the final flooding of El Infiernillo from the north is completed, the waters of Bahia Kunkaak are receding and a tiderip is tearing through Boca Infierno at a rate sufficient to half empty the reservoir of its accumulated volume before the ebb trough has rounded the island to the head of the strait. Thus the effect of the exceptional tides of the gulf and the peculiar configuration of Seriland is to concentrate and accentuate tidal currents in El Infiernillo, and to convert the channel into a raceway for nearly continuous tide ripe. According to Dewey, the spring tides are 10 feet and the neaps 7 feet about the northern end of the strait;[1] in December, 1895, the tides about Punta Blanca and Punta Granita were roughly determined as 13 or 14 feet at spring and 7 or 8 at neap, the range varying considerably with the direction and force of the wind; and the consequent current through Boca Infierno was estimated at 4 to 8 miles per hour, the higher velocity of course coinciding with the spring tide. The change in direction of the current is almost instantaneous—indeed, the run is in opposite directions on opposite sides of the narrow strait when the wind sets obliquely—so that the tidal flow is practically continuous. The currents are of course slacker in the body of the strait, but even here suffice to transport coarse sediments; and it is to this agency that the "shoals and sand spits" noted by Dewey[2] and the maintenance of a deep channel through Boca Infierno are chiefly to be ascribed. The materials of Punta Tormenta and Punta Tortuga attest the transportation of pebbles up to 3 or 4 inches in diameter by the combined work of waves and tidal currents.

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Like other mountain-bound water bodies, the portion of the gulf washing Seriland is exceptionally disturbed by winds of given velocity by reason of the high angle of incidence; and moreover the exceptionally prominent local configuration disturbs the atmospheric currents in a manner somewhat analogous to that in which the tidal currents are disturbed; so that the winds are highly variable but generally strong. Under the combined action of tide and wind the waters are normally ruffled; choppy seas freely flecked with whitecaps are rather the rule than the exception,[3] and are replaced less frequently by calms than by steadier billows breaking in continuous surf on sand-beaches (figure 5) and dashing into foam-flecked and rainbow-tinted spray-jets, bathing the rocky cliffs for 50 feet above their bases. Sometimes the wind stills suddenly, when the sea sinks to rythmic swells, soon extinguished by reaction from the irregular shores and by the interference of tide-currents; but the swell seldom dies away before the gale springs again.

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[1] Publication No. 88, U.S. Hydrographic Office, Bureau of Navigation, 1889, p. 102.
[2] Op. cit., p. 103.
[3] A calmer and navigable condition of the sea is shown in the view of Punta Tepopa, plate IV.

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

132 The broad valley between Sierras Seri and Kunkaak, bottomed by El Infiernillo, is especially beset by fierce and capricious gales; the general atmospheric drift is disturbed by the leading and lesser sierras, as well as by temperature convection from the gulf, and eddies are developed in such wise as to send air-currents directly or obliquely up or down the valley. These local or sublocal winds are characteristic. Judging from observations covering several weeks, the valley is wind-swept longitudinally for an average of eighteen or twenty hours daily, the winds ranging from strong breezes to gales so stiff as to load the air with sand ashore and spray seaa; and even the calms may be broken

[122]

FIG. 5.—Embarking on Bahia Kunkaak in la lancha Anita.

any minute by sudden gusts and williwaws, passing rapidly as they arrive. Not only waves but wind itself combines with tides to shape the structural features of the valley; nowhere within it do flour-fine sands [134] like those of Desierto Encinas occur, save as a hardly perceptible constituent of the dunes and banks of courser sand—they have been blown into the sea or beyond the limits of the valley. Throughout the strait so expressively named by its explorers, the capriciousness of the sea 132 culminates, despite the shoalness and the protection from easterly and 133 westerly winds; the storm currents and tide-currents are half the time opposed, raising breakers even when the air is nearly still; eddies and whirls and cross-currents arise constantly, and even at the stillest

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

hours tumultuous waves come and go sporadically, while about the mile-wide boca the choppy sea sometimes takes the form of spire-like jets, spurting 5 or 10 feet high and breaking into aigrettes of glittering spray in most unwaterlike and wholly indescribable fashion. Dewey described the strait as "unsafe for navigation by any except the smallest class of vessels"; it is safe, indeed, only for portable and indestructible craft like the Seri balsas, which may be put off or carried ashore at will by craftsmen willing to wait for wind and tide, and unpossessed of impedimenta of a sort to be injured by wetting. Of such an environment the balsa is a natural product. 132 133 [501]

The adjunct islets of Seriland are miniatures of Tiburon in all essential respects, save that they are without fresh water. The largest is San Esteban, a somewhat complex butte rising sharply from the waters in a nearly continuous sea-cliff recording vigorous work by storms and tides; it is occasionally visited by the Seri, chiefly in search of water-fowl and eggs. The most important of the series in Seri economy and mythology is Isla Tasane, off the mouth of Bahia Kino; it is a rugged butte some 600 feet high, rising in wave-cut cliffs on the sea side and pedimented by low spits and banks of sand toward the lea; the sand-banks are literally flocked with pelicans, while other fowl cover the flatter ledges and crowd the crannies of the pinnacle. Isla Turner is a somewhat smaller and still more rugged butte, bounded on both sides by precipitous cliffs, while Roca Foca is merely a great rock shelving upward from the storm-swept waters off the most exposed angle of Tiburon; in the crannies of the former birds nest abundantly, while the lower ledges of both are haunted by seals. Isla Patos, north of Tiburon, is a breeding-place for different water-fowl, and is especially noted as a refuge for ducks; it, too, is for the most part a rocky butte, with a sandy shelf at the eastern base. Beyond San Esteban lies the similar but smaller Isla San Lorenzo, while Isla Salsipuedes and a few other islets stretch thence northward half way to the southern point of Isla Angel de la Guarda, the second-largest island of the gulf. San Lorenzo and the smaller islets are occasionally visited by the Seri, partly for a mineral pigment used in face-painting, partly in quest of game; and they sometimes push on to the larger island to enjoy its fairly abundant game, including the easily taken iguana, amid the ruins of an ancient culture apparently akin to that of southern Mexico. Even the most frequented islets, Tasane and Patos, can be reached only by crossing miles of open sea; but in their way the Seri are as canny navigators as they are skilful boat-builders—it is their habit to hug the shore in threatening weather, to await wind and tide for hours or days together, to set out on distant journeys only when all conditions favor, and in emergency to seize inspiration from the storm like the vikings of old, and bend supernormal power to the control of their craft. 133 136 [222] 224 [135] [172] 502

Summarily, the prevailing features of Seriland may be said to be 13

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

smaller rodents, especially the long-tail nocturnal squirrel, are excluded from the Seri menu by a rigidly observed tabu of undiscovered meaning. A general consequence of this tabu is readily observed on entering Seriland; there is a notable rarity of the serpents, the high-colored and swift efts, and the logy lizards and dull phrynosomas so abundant in neighboring deserts, as well as of song birds and their nests; and this dearth is coupled with a still more notable abundance of the rodents, which have increased and multiplied throughout Seriland so abundantly that their burrows honeycomb hundreds of square miles of territory. A special consequence of the tabu is found in the fact that the myriad squirrel tunnels have rendered much of the territory impassable for horses and nearly so for pedestrians, and have thereby served to repel invaders and enable the jealous tribesmen to protect their principality against the hated alien. Seriland and the Seri are remarkable for illustrations of the interdependence between a primitive folk and their environment; but none of the relations are more striking than that exemplified by the timid nocturnal rodent, which, protected by a faith, has not only risen to the leading place in the local fauna, but has rewarded its protectors by protecting their territory for centuries.

In both the collective and the strategic chase, constant advantage is taken of weakness and incapacity, whether temporary or permanent, of the prospective quarry; so that diseased and wounded as well as sluggish and stupid animals are eliminated. The effect of this policy on the fauna is undoubtedly to extinguish the less capable species and to stimulate and improve the more capable; i. e., the presence of the human factor merely intensifies the bitter struggle for existence in which the subhuman things of this desert province are engaged. At the same time, the entrance of the human folk into the struggle characteristic of subhuman species serves to bar them from one of the most helpful ways to the advancement of their kind—i. e., the way leading through cotoleration with animals to perfected zoeculture. The most avidly sought weanlings in the Seri chase are the helpless young, and the heavily gravid dams which are pursued and rent to fragments with a horrid fury doubtless reflecting the practical certainty of capture and the exceptionally succulent tidbits afforded by the fetal flesh; naturally the cruel custom reacts on habitual thought in such wise that the very sight of pregnancy or travail or newborn helplessness awakens slumbering blood-thirst and impels to ferocious slaughter. To such custom and deep-planted mental habit may be ascribed some of the most shocking barbarities in the history of Seri rapine, tragedies too terrible for repetition save in bated breath of survivors, yet explaining the utter horror in which the Seri marauder is held on his own frontier. At the same time the hunting custom and the mental habit explain the blindness of the Seri to the rudiments of zoeculture, and clarify their intolerance of all animal associates, save the sly coyote that habitually

3:Davis & Dawson E-5 (1922-1940)1945 NU31 Seri NU31

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FIG. 3. THE SERI HOME—A BOWER OF BRUSH

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FIG. 4. AN AGUAJE ON TIBURON ISLAND
THE PRINCIPAL WATER SUPPLY AND SOURCE OF THE CARRIZO REED USED IN CONSTRUCTING THE BALSA.

[p.195]

5:Dawson N-5 (1940) 1944 NU31 Seri NU31

DESERT
PLANT LIFE

SIXTEENTH YEAR NUMBER 9

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SOME ETHNOBOTANICAL NOTES ON THE SERI INDIANS

105 121 If the natural resources of a region may be said to reflect the degree of cultural and social development of its aboriginal people, we may easily understand why the Seris of Sonora, now approaching extinction and with much modified habits and culture, are considered the most primitive and savage of American Indians. Certainly the arid coast of Sonora, destitute of water but for a few widely separated, stagnant holes, with a dry, rocky [133] soil habitable only by the most frugal and thorny of desert vegetation, presents little in the way of resources to a native people. It was, indeed, [262] only along the ocean shore that the Seris found animal food sufficient to sustain them, principally, the sea turtle and the pelican. This food source proved adequate to support a tribe of some 2000 in pre-Columbian times, but the limited habitat of the pelican and turtle brought about extreme isolation of the people. Thirty-mile-long Tiburon Island became their principal home, separated from the mainland by the narrow but tempestuous channel, El Infiernillo, across which they frequently voyaged in their buoyant balsas to search out vegetal supplements to their monotonous sea food diet. It is this use of vegetable materials, not only as food but in other phases of the domestic economy of these people in earlier times, with which these notes are particularly concerned.

225 Primary occupation of the Seris aside from their continual movement to and from the water holes was, necessarily, their search for food, for they cultivated nothing and conserved little. Fish were exceedingly abundant in the waters around their island, but their very limited tool sense, pro- [247] viding them with almost no fishing devices, excluded much of this food from their diet. Clams and other shellfish were to be had, but it was the abundant green sea turtle, feeding upon luxuriant growths of marine grass, *Ruppia maritima*, in the shallow, sandy lagoons along El Infiernillo, that provided their meat staple. The turtles could be captured with ease during egg laying season as they crawled over the beach, but at other times they had to be 396 speared from a watercraft. No sizable timber grows in Seriland and before the advent of flotsam boards and hoop-iron it would have strained the

5:Dawson N-5 (1940) 1944 NU31 Seri NU31

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Preparing a mesquite bean meal cake on the stone metate.

Seri women carrying firewood back to camp. Note the baskets and the head pads made of mesquite or torote.

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Tiburon Island - 1936

123 As a concrete result of that first trip to Tiburon, I secured a
115 *balsa* (boat) made of *carrizo* canes lashed together with native fibre,
501 which *balsa* Mr. Heye said it was the finest one in North America.

[226] This *balsa* was given to me without hesitation, although it furnished one or two families with sea food.

115 I wish to pay tribute to Senor Roberto Thomson who has been my constant companion, friend, guide and interpreter during the past twenty years, on all my trips to Tiburon and various parts of Mexico. I found him absolutely dependable, using excellent judgment in critical situations. He was honest, fair, intelligent, looking out constantly for my safety and comfort always, enduring hardships cheerfully. A better all-round out-door man I have never seen equaled. In short, he is a real *hombre*, and *muy simpatico*.

13 Tiburon, or *Shark Island*, long noted for its evil reputation as
181 the home of the most savage and treacherous Indians of North America,
• 133 lies in latitude 29°north and 112°30' west longitude, in the Gulf of California. It is shaped like a parallelogram about thirty-five miles long and eighteen to twenty miles wide, and lies parallel to the coast of Sonora, Mexico, of which, no doubt, at some remote period, it once formed a part.

It is separated from the mainland, for the most part, by a strait
[127] called *El Infernillo*, or The Little Hell, through which the rising tides pour a resistless flood. It is a desert island and supports a desert arboreal vegetation which includes several varieties of the cactus family and the *mesquite, palo verde, palo fierro, torote, palo blanco, ocotillo* and others. The giant *saguaro, sarbueso* and *pitahalla (pit-a-haya)* cactus are found here also.

Two desert ranges run lengthwise of the Island, which, on its westward or windward side, terminate in sea-worn cliffs against whose ramparts dash the heavy breakers of the Gulf, and on its eastern side, by long alluvial aprons from the foot of the mountains, sloping gently down to the lovely shell-strewn beaches. From this side the foot of the mountains lies from two to five miles distant. On this, the leeward side of Tiburon, the sea is much calmer, and often, in the early morning, it is as smooth and placid as a lake, reflecting each rosy, lavender and purple tint of the rugged Sierra Seri along the Sonoran coast, as in a mirror. The exquisite loveliness of marvelous sunrises over the pure limpid waters of the *Estrecho Infernillo* is mystical.

134 The soil is loose and sandy, unsuitable for cultivation, and im-
241 possible for producing domestic crops of any
142 kind.

175 if they were as hungry then as they are today, they would not stop to
641 spike a man up preparatory to serving him. Their only tools then were
266 rocks to use as hammers and hoop iron for knives, and these are in
114 universal use today.

[412] There is no doubt that the men were killed, but I think these mining men purposely exaggerated their findings, if any.

648 There is no doubt that the Seris were brave fighters, treacherous
721 murderers, sparing neither men, women or children on their raids,
727 killing ruthlessly. But there is one charge which cannot be brought against them, which cannot be said of many tribes north of the border. So far as I could find out, they never tortured nor scalped.

648 The Seris never took prisoners and they never inter-married with
721 other tribes, so their strain is pure.

727 There was one exception. Sixty or seventy years ago, the Seri
563 Chief Coyote Iguana and his band of warriors held up the stage between Hermosillo and Guaymas, and killed all except a handsome Spanish girl of the better class. This girl, Coyote Iguana made his wife and by her raised a family. One granddaughter still survived in 1924, and while more attractive than the general run of Seri, her complexion was fully as dark.

The Seris, Ishmaelites among the native tribes of Mexico---the most fascinating Indians in North America!

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123 *Reception Committee, Tiburon Island - 1935*

115 On the twenty-fifth of April, nineteen twenty-two, I engaged the services of Roberto Thompson, who with his father and grandfather

[text continues on p. 149]

[123 [15] before him, has been a friend of the Seris for years. It was his father who brought McGee to Tiburon in 1895, and in many ways they have shown kindness to the Seris.

[122] I hired an auto-truck for fifty dollars to take the necessary people and supplies. These supplies consisted of some fine-tooth combs, needles, thread, one bolt of white muslin, 150-pounds of flour, panoche, saws, nails, harmonicas, little round mirrors, fish twine, hooks, 2-bits and other things.

We left at 6:30 a.m. With us was the driver Ricardo, his friend Rafael Ysabel, son of an ex-governor of Sonora. When we reached Bob's ranch, *El Providencia*, five or more miles out, we added a one-eyed Mexican and Bob's brother.

After a simple dinner at the ranch house we drove across the mouth of the Sonora river, a broad, flat alluvial plain probably four or five miles across. We circled about and turned north, stopping at the edge of a broad shallow bay. The tide was down and the shore was slimy mud and filled at places with sharp-edged clam and oyster shells. There were oyster flats at the edge of the mud, so Roberto and the Mexican waded out and secured enough of them for supper.

[130] During the day we ran close to a Gila monster, a horrid looking black and orange mottled fat lizard who waddled along. Rafael held his head with a rifle, reached down and caught him in back of the head, and held him up. He hissed like a snake and bears a bad reputation.

[133] The country was flat and the road pretty good. Detached mountains we passed during the day and one range called *Siete Cerros*, Seven Mountains, with peaks all in one row, reached for fifteen or twenty miles. We passed a few ranches where the people were pumping water from wells or hauling in the old turn-table way with a mule and rawhide buckets. Then we made camp, got everything ready for an early start the next day and turned in.

At dawn three men took the boat with all our traps and groceries and fifteen gallons of fresh water, and Rafael and I walked up to the point to meet it. Louis and the driver and truck returned to the ranch. The weeds and ground were very wet and we came to some sloughs filled with soft ooze. These were impossible to cross, so we went around them and then decided to strike for the ocean side and go along a sand bank. This we did, and when we reached the end we saw the boat waiting for us half a mile or more across a great flat.

[133] The ocean view was grand. A great rock, *Alcatraz Island*, protruded from the sea a short distance out, on which countless cormorants roost and raise their young. Bob often gathers their eggs.

We reached the boat and climbed in and pushed off into deep water. There was no wind and the tide was part way against us, but we rowed, three of us, for many many miles. We landed in a small cove, drew up

[text continues on p.15]

10: Davis E-5 (1922-ca. 1939) 1965 NU31 Seri NU31

Roberto Thomson waving white bandera as signal of peace. In the Gulf - Sonora. April 26, 1922

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Pulling the boat up the beach above high tide - Kino Bay and Alcatraz Island - 1936

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123 Mile after mile. We got very dry and had almost given up finding the
[133] water. We had gone up a sandy wash for miles, barren arid mountains terminating in regular saw tooth pinnacles on all sides, some of beautiful red rock---red as blood; some gray and some lavender.

312 At last we came to the water hole which had also been frequented
123 by coyotes, skunks and other animals, and their flavor was easy to taste. But we had ceased to be critical long ago. The hole was really a crooked shaft and led down crude steps worn into the rock for ten or twelve feet. It had been dug by clam shells and bones and sticks, and may have dated back many years. Part of it was through rock and it was a work of great patience to dig with such primitive tools.

123 At the foot, a seepage came through the sand and formed a shallow pool from which, in the semi-darkness, we dipped water and filled our cans. After a rest, all partook of a generous drink. It took us two and a quarter hours---six miles to go there, and we were probably the only white men who had ever been there. I am glad I went for the experience, but we were all completely exhausted on reaching camp. Ricardo and the Mexican carried the cans of water six miles on a stick balanced over the shoulder. Roberto left his sign along the trail. We slept in the Seri huts, all tired out. My feet were tender from walking on the sharp shells and my shoes had shrunk from being wet in salt water, and that pained my feet greatly by cramping them too much.

We heard many interesting tales about the Seris: their wonderful endurance, their susceptibility to disease, their marvelous feats of tracking and swimming, their habit of getting food only when necessary and laying up none ahead, and other queer customs.

The breaking of dawn brought a marvelously beautiful sunrise. It was very low tide and the boat was stranded nearly two hundred feet from water. The sky and sea were crimson and the mountains purple on the Sonora side. The sea was calm, without a ripple, and mirrored every peak and color and made a picture of indescribable beauty.

We ate a hasty breakfast and strained ourselves to the utmost to move the boat. It slowly slid over the grass and shells to the water's edge, and then we had to push it out seventy-five feet in the water to get it deep enough to float. A slight breeze was blowing, so we raised the sail and rounded the point and headed across for another point, across a stretch of water five or six miles.

[202] At last we saw a few huts and as we neared shore we saw two men with rifles. We waved the white banner, laid our rifles handy, fixed our revolvers, and ran the boat ashore. The men had darted back into the brush as experience had told them to beware of strangers. Roberto and his brother Nene leaped out, leaving their rifles, seized the white flag, ran after the men and called to them and said they were friends who had come to see them. They recognized Roberto, returned to the brush shelters, left their rifles and came to the boat bare-

[text continues on p. 157]

157 The women are virtuous and faithful and perform all the duties of
152 wife and mother and bear their share of hardships. The hard life,
[145] exposure and struggle for existence soon causes hard features, wrinkles
[165] and ugliness. Many babies die young and the tribe probably numbers
[167] only about two hundred.

The dancing by the driftwood fires continued as we turned in to
123 rest, our eyes constantly drawn to the flame and the glittering eyes in the wild dark faces, while the waves of the sea accompanied the chanting in that mysterious isle of Seriland.

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Seris off to the fishing grounds - December 1934. Alcatraz Island in distance.

222 In Seriland most of the food comes from the sea. During April and May, at the time of my first visit, a green grass growing on the sea bottom was detached and washed ashore. The women dragged it up on the bank near camp and spread it out to dry. Some of the stalks contained about seven fine green seeds the size of a pin head. When dry, the
[285] women threshed them out with sticks on a piece of canvas. These are cleaned by the deft use of the *batea*, or winnowing basket, of which these people are pastmasters.

252 A pint of these fine seeds were parched in an olla over coals of driftwood and constantly stirred to prevent burning. It was then ground
262 on a flat rock like a *metate*---any flat rock---into a green meal which was very nourishing. This was cooked in an olla with turtle oil, making a porridge like thick green paint. It was then drunk or eaten with the fingers. If there is plenty, two fingers are used; if not, only one finger.

262 The Seris also eat the fruit of the *cholla* cactus, *pitchalla* and *sag-*
222 *uaro*, and probably many other plants in season, but they are wild to get flour. But the principal diet is *cahuasa*, or sea turtle.

225 After a day or so with the Seris, their food supply became exhaust-
123 ed and they made arrangements to take our boat (all they had was a
[177] *balsa*) and get a sea turtle. So at four o'clock in the morning, with Roberto and Nene, his brother, and myself, they shoved off for the fishing ground. It took two hours of hard rowing to reach the Sonora
[33] side, as the tide was racing up the *Infernillo*. Most of the waters are shallow, with patches of dark and light sandy bottom, with seaweed or grass. On this green grass the turtle feeds; it is their alfalfa field, and it takes a keen-practised eye to see a turtle at the bottom and harpoon him before he escapes.

225 Once on the hunting ground, water, one of the Seris stood in the
[411] bow with a harpoon twenty feet long, a detachable barb on the end of it, and a heavy line attached. The Seri in the bow motioned with his hand this way or that, slow or fast, and watched the bottom. At last
[411] he plunged his spear and withdrew the pole. The turtle swam awhile until exhausted, and then he was drawn alongside, his head pounded with an ironwood club, and then he was turned on his back and drawn on board. This called for great skill in balancing the cranky, smooth-bottomed boat to keep it from shipping a wave.

225 When a Seri goes in his native *balsa*, which only holds one man, he
501 straddles the middle part on his knees, resting them on seaweed. The craft is light and is a good sea craft, but it is low in the water and the man is wet all the time. He uses a double-bladed paddle, and his harpoon rests against pegs set in the *carrisos*. A rock which serves to quiet the turtle, two pointed stakes and a heavy fish line complete the equipment. He has to paddle across to the other side in that cramped position, say eight or ten miles, very early in the morning, then watch his chance to harpoon. If successful he brings up the turtle, knocks him on the head with the rock, pulls him on the end of the craft by skillful manipulation, cut slots in the front flippers, put stakes through and into the *carriso*, pinning him firmly in place, then paddle back.

225 The wind came up strong when we started to return from our turtle
123 hunt and with wind and tide against us we rowed across the Island. Bob and his brother disembarked and took it afoot for camp, a distance of ten miles, reaching there at two p.m. The Seris made a tump line and towed the boat, one towing and two warping off-shore until we arrived at camp about four p.m.

When the bow was run up on the shore everybody came down, the women and children talking a steady stream in their strange jargon.
123 They soon jerked the heavy turtle out, dragged him up the beach on
262 his back, and began immediately to cut him up. Bob spoke for the breast, which is a white plate on the underside of the turtle with

[text continues on p. 168]

five-gallon cans full. They were fastened one each end of a *palance*, 123
or shoulder pole, and thus brought to camp. If anyone thinks this is
easy they should try it over rocky, uneven, sandy, stony ground,
dodging thorny vegetation at every step.

The colors of the mountains were mostly red of volcanic character, [133]
with great streaks of yellow and pink, deeply cut with side canyons
and sharp ridges, all similar to other desert ranges.

The men caught a few crabs and gathered clams in the afternoon,
which helped out our larder. One of them told about his wife being
shot. He said they had a big fiesta and during the drunk, a Seri shot
at his head. He happened to be stooping alongside his wife and the
bullet buried itself in his wife's thigh. We could feel it through
her clothes.

A good many years ago when stages ran between Nogales and Guaymas, 648
the Seris held up the stage, killed the men and captured one Mexican 727
girl. She was brought here and made the wife of one of the chiefs, 563
Coyote Iguana, and she bore children. Some years later her brothers
came here to induce her to return, but she refused, saying that she
was ashamed to go back and she had children here. About fifteen years
ago in a battle with the Papagos, two of her sons were killed.

The Papagos have taken toll of many Seris, these hunted Indians 648
who are such fascinating and ingenious companions, whether they are
harpooning turtle or packing water through the thorny wastes.

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Seris making fire (with fire drill) - Island of Tiburon

123 225 *cahuamas*, or sea turtle. After two or three hours' use of the boat they had harpooned two and brought them to shore. Then the whole bunch went to the shore and dragged them out and began cutting them up as they were all hungry and had had nothing to eat hardly. They gave us one breast, the most delicate part of the turtle. It is tender juicy white meat.

123 We soon had the boat loaded again, paddled to the Indian camp, and took the *carriso* boat in tow. We raised the sail and a good wind sprung up and we made a fast run before the breeze. This also whipped up a nasty sea, and the great green rollers would come and slop against the freeboard to an inch of coming on board. At a critical time our slight tow-line parted and we stood a good chance of being swamped in order to hold the *balsa* until we could bend a heavy fish line with great fishhooks which we jabbed into it.

The boat, all the time, was ripping through the water, the boom was slopping in the waves, and each green roller threatened to come on board. We dared not spit overboard for fear of dipping up a wave. The wind and waves got so nasty we decided to make a landing. To add to our anxiety, the *balsa* had broken loose again, but we held it with our hands despite the waves. We unstepped the mast after dropping the sail, and just in time, as the seas got bigger and the wind stronger. We were so cramped we could not row, so the paddles were used, and eventually we reached a sandy beach, all safe and sound, and pulled the boats up out of the water.

I had sent a note ahead, in English and Spanish, to the car to meet us at a designated place on the coast to the south about fifteen or twenty miles. He had stopped to eat *cahuamas* to give him strength. He was a big raw-boned man, Chico Romero, son of the Chief.

123 • 133 On the two points nearest Tiburon and Sonora, the most beautiful rocks had been washed up by the sea, that I ever saw. All colors of the rainbow were represented, but lavender and violet prevailed. The sands were a delicate lavender while the shore at Tinajanita, up the bay, was a deep lavender. Many beautiful shells were left by the tide as well as various colored pumice.

Our present camp was at the foot of the granite hills, and the sand was almost white. It was made much whiter by tiny shell fragments only as large as grains of sand.

180 Ten or twelve years ago Bob's uncle and cousin were captured by the Yaquis. They suffered the most inhuman tortures. The soles of their feet were sliced off and they were made to walk over sharp rocks. Their eyes were gouged out and they were scalped.

Another captive was used like a piece of beef. He was staked out and one Yaqui would ask the other:

"What cut would you like?"

"I'll take a piece of leg," the other would answer.

A chunk of living flesh would be cut out and piece by piece the captive was hacked to pieces.

Only two or three years ago Bob and two friends had trouble. Bob escaped by a very narrow margin, but they tracked him like hounds for twelve miles. His friends were captured and stripped of clothes and everything, and expected every moment to be shot. They caught a hog, hung it up alive and cut a long strip off the back and left it hanging. They got frightened away suddenly and left the two friends unharmed. His uncle was captured on his way to Royon, on the San Miguel River twenty miles south of Opodepe.

648 The Yaquis and the Seri Indians have been enemies for untold years. What grim scenes the eyes of the desert have witnessed in the past!

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Entering cave - Tiburon - 1936

123 One night when the sea was quiet Bob and his brother went sea turtle hunting but didn't catch any. We made a bright fire of drift to guide them back. The sea murmured gently, accompanying the crackle of the fire.

We turned in on-shore in the clean white sand. We roasted the turtle breast that the Seris gave us, by standing it on edge in front of the fire. It was tender and elegant. For bread we made pancakes, mixed with sea water. We were out of baking powder. The green coffee secured from the Yaqui fishermen was wasted in a frying pan until it

123 was black. He then ground it in the frying pan by rolling it with a tin can. When made, the coffee was black and bitter, but they were used to it that way.

At three thirty in the morning we were up from our sand beds and drank coffee. At four we pushed off, towing our *balsa* on which we lashed our turtle shells, antlers and other things. Our boat rode the waves like a duck.

As we glided by the foot of some mountains we could hear the surf break sullenly. We had the sail up but soon had to resort to the oars as the slight wind died out. Day soon began to grow light. The sea was glassy, reflecting the rosy morning tinge. There was a swell on but the waves were smooth.

136 The cormorants, in threes and fives, began flying to their feeding grounds with swift wings and necks outstretched. Then a few Pelicans drifted idly by on lazy wings. A school of sardines fretted the water near us, chased by a hungry fish from its depths. A few porpoises rose and dived, rose and dived, rose and dived, time after time. At one time eight of them came within twenty feet of us and one dived right under our bow, bouncing the boat up and down.

• 139 123 Soon we were passing some red volcanic hills, with caves and blow holes in the cliff and sea caves below, in which the sea roared. Giant cactus secured a precarious footing in the crannies of the cliffs. Then a long beach, then *Cerro Prieto,* another red cliff descending to the sea, penetrated with numerous caves and roosting places for cormorants.

123 As we neared Alcatraz *(Pelican)* Island, we saw a fishing boat in the distance. The wind had freshened and was ahead and the waves seemed almost to come in board, but the hollowed tree arose and rarely shipped any water. A boat put off from the fishing boat and was rowed to shore, and as we came up we hailed the crew and grounded our own boat. They had seen us from Alcatraz Hill, and seeing the balsa thought the Seri Indians had stolen a fishing boat and were towing their own boat. Each man had a belt of cartridges and if the Seris had been there instead of us they were going to kill them. Bob knew them from Guaymas.

We pushed off from shore again, and after rowing a half or three quarters of a mile further we beached our boats, cooked dinner and waited for our auto truck. Our provisions were almost gone. We had only enough for one meal left. No meat at all. Water was almost gone. None other for miles.

415 264 262 One of the cherished vessels used by the Seris is an agate chamber pot. It is black from much use. When I saw it, it contained a green slimy mess made from meal of seaweed seeds and the green fat or oil of the turtle. The Seris stick their fingers into the pot and then lick them off. If any is left the dog licks out the pot. No vessel is ever washed; it is licked clean.

10: Davis E-5 (1922-ca. 1939) 1965 NU31 Seri NU31

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Seri Indians at home

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Seri Indians preparing their meal

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826 so all the other flies could see and also come to this dead thing."

707 A few weeks ago, Antonio Herrera had a very vivid dream. He dreamed
[118] that he was hunting in the mountains for deer and came across a cave. (These volcanic mountains are pitted with caves.) He went into the cave and saw all kinds of things dear to the heart of a Seri---plenty of rifles, lots of cartridges, knives, *manta* (unbleached cotton), necklaces, red bandannas, blue overalls, *plata*, or silver, and many other things.

[058] When he awoke he sought his father Manuel Encinas, who is a medicine man and interpreter of dreams, to explain his dream to him. The price demanded by Manuel was six *tiras*---or 30-30 cartridges, a very high price, according to Seri standard. The explanation was this:

It was true that the cave was there and all the things in it just as seen and described by Antonio, but in order to find it he would have to fast nine days and go without water that length of time also, in the heat of summer. Then the way would appear to reach the cave. So far, Antonio has not attempted the fast.

381 I witnessed the operation of making a certain kind of pitch or
396 tar which the Seris use to make the seams in their canoes or boats tight. The women pound up the dried pulp next to the outside skin of a dead *pitahella* cactus (organ cactus). This is very dry and brown in color and the pieces are pounded up to a dry powder with a wash or shore rock in a dried deer hide. This is placed in a *batello*, or flat basket, and manipulated so that the coarse pieces come to the top and are scraped off and thrown away. The fine powder is then put in a five gallon can and some porpoise or sea-lion oil or horse oil is poured on it and stirred into a thick gummy mass. When thoroughly mixed it is put over the fire, in an olla, to boil and continually stirred for an hour or two until it is the consistency and has the appearance of coal tar. While being worked it is kept heated and applied to seams inside and outside the boat. It hardens just like tar and answers the same purpose.

123 Since the corn, which had kept this band of Seris in food, disap-
225 peared two days before we came, and they had barely kept going on
[089] seeds and a few fish, and they all had decided to leave camp with us in the morning---the women walking and the men and some children in boats---it was necessary to supply them with some food to take them to the hunting grounds of the *cahuama*, or sea turtles, and land them
[262] on the Island. The *cahuama* would furnish them meat---their favorite and national food, and the shores would supply them with clams, oysters, crabs and other sea food.

123 So the whole band was called around our camp and each family was furnished with two cups of corn, two of beans, some green coffee and a cup of cube sugar. For the first time our camp was free of Indians, and we ate and went to bed in peace.

The amenities of civilization were laid aside and forgotten in

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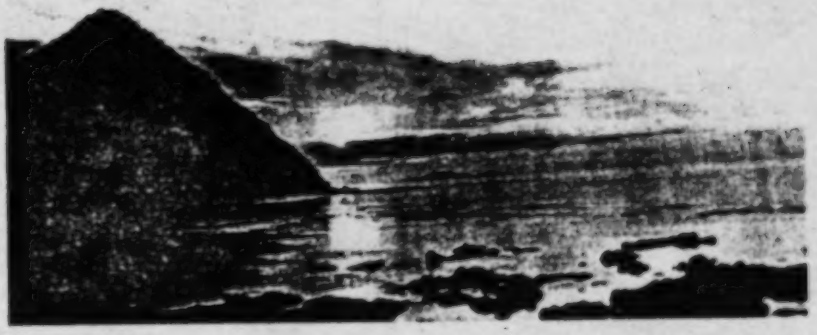

Sunrise - Tiburon Island - 1936

The Pelican Skin Robe

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Toshne or Pelican Island - Kino Bay - 1936

It was the dark of the moon and a very black night, ideal for surprising the Pelicans asleep, roosting on the steep slope above the waters of the Sea of Cortez. The Pelican is a very wary bird and cannot be approached in the light of the moon. 123 223

At sundown we had climbed several hundred feet to the saddle between two peaks on the Island of Alcatraz in Kino Bay off the coast of Sonora. We rolled up in our blankets and hugged the great volcanic rocks at the crest, to be as inconspicuous as possible to the great birds circling the peaks to seek a roosting place on the west slope of the Island.

Santo Blanco had provided himself with a torch made from the slender rods of a dead *pitahalla* (organ) cactus which he had tied together in a long bundle. The four young Seris who joined him also had a torch and in addition, each had provided himself with a club. We took no fire arms. Senor Roberto Thomson, my companion, had arranged this trip with Santo Blanco, for my benefit. [416] [124]

[text continues on p. 215]